

Claims

Claim 1

A method for the production of an organic fertiliser of humic-like nature, by oxidising and ammoniating treatment of lignite, characterised by the fact that the lignite is suspended in an aqueous-ammoniacal medium of pH > 9 up to 12 and is partly dissolved and is oxidised at a temperature from 20 to 100°C under normal pressure; and the organic fertiliser is obtained as a dispersion in aqueous medium, by thickening, or drying, with the C/N ratio being between 9 to 15.

Claim 2

A process according to claim 1, characterised by the fact that lignite is transferred into an aqueous ammoniacal mixture of a suspension and solution, and afterwards in a reactor in the first place without supply of oxygen or air is activated alkaline and heated within in an adjustable time span of up to 0.5 hour to an oxidation temperature of below 100°C, and subsequently the oxidising gas at a reaction temperature below 100°C, in terms of air or oxygen under normal pressure, and in terms of air/oxygen mixtures under normal pressure with an oxygen partial pressure in the range between 0,02 and < 0.1 MPa, is introduced into the reaction mixture by the injector principle, and finally the supply of oxidising gas is shut and the reaction stopped and the reaction mixture without any continued charging of oxidising gas cooled down in a time period of less than one hour to a temperature required for further processing.

Claim 3

A process according to claim 1 or 2, characterised by the fact that the oxidation with air or oxygen, or air/oxygen mixtures is carried out in an aqueous-ammoniacal mixture of suspension and solution with an ammonia concentration of up to 7 %.

Claim 4

A process according to one or several of claims 1 to 3, characterised by the fact that lignite of various particle sizes is used.

Claim 5

A process according to one or several of the claims 1 to 4, characterised by the fact that the oxidation is carried out over a period from 0.25 to 4 hours.

Claim 6

A process according to one or several of the claims 1 to 5, characterised by the fact that lignite as mixed with technical lignins from pulp-making, or as mixed with technical lignins from wood hydrolysis, or as mixed with lignin or with lignocellulose material from the Steam Explosion pulping for the production of fibrous materials, and lignite as mixed with lignocellulose material such as wood and bark particles, can be used.

Claim 7

A process according to one or several of claims 1 to 6, characterised by the fact that macro and micro nutrients such as phosphorus can be added during or subsequent to the oxidation of lignite or lignite in a mixture containing lignins.

Claim 8

An organic fertiliser of humic-like nature according to one of the claims 1 to 7, characterised by the fact that the product has a C/N ratio from 9 to 15, and that nitrogen occurs in various chemical bonds as compared with total nitrogen, of which

- 20 - 45 % are available in terms of ammonium nitrogen
- 55 - 80 % are organically bonded, of which
- up to 20 % of the total nitrogen are bonded in terms of amide, and
- up to 60 % occur in terms of stronger organic bonds

Claim 9

Organic fertiliser according to Claim 8, characterised by the fact that in a C/N ratio from 9 to 15 the organic fertiliser contains up to 6% total nitrogen.

Claim 10

Use of the organic fertiliser according to one or several of the claims 1 to 9, characterised by the fact that the organic fertiliser is applied as such or is added to substrates of yield improving and soil ameliorating properties.